By JOHN A. GORMAN

Nonfinancial Corporations: New Measures of Output and Input

Nonfinancial corporate output per unit of total factor input increased from 1948 to 1971 at an annual rate about four-fifths as rapid as the increase in labor productivity, as corporate capital input grew at a much faster pace than labor input. The growth rate of corporate productivity was most rapid in the early and mid-1960's when it averaged 3.5 percent per year. Since 1966, the growth rate has averaged only 1 percent. The trend in the rate of return to capital has tended to be weak during periods of slow productivity growth and strong during periods of fast productivity growth.

BEA has for some time calculated and published estimates of the gross product of nonfinancial corporations in current and constant dollars and the components of gross product in current dollars. BEA has also done a good deal of work on estimates of capital stocks as well as of corporate profits and depreciation based on the assumption of consistent depreciation practices over time.

This report presents material already published by BEA along with new estimates which together provide a basis for studying productivity and costs of nonfinancial corporations. Specifically, the data presented here consist of annual estimates of nonfinancial corporations' output, of capital stocks and inputs, of labor inputs consistent with BEA's compensation and employment series, of combined labor and capital inputs (total factor input), and of profits. The output, profit, and stock estimates are based on the assumption of consistent depreciation practices. Total factor productivity is estimated, as well as the partial productivity of labor and capital separately. Also, rates of return to capital stock are calculated, relating property income to the capital stock valued at current replacement cost.

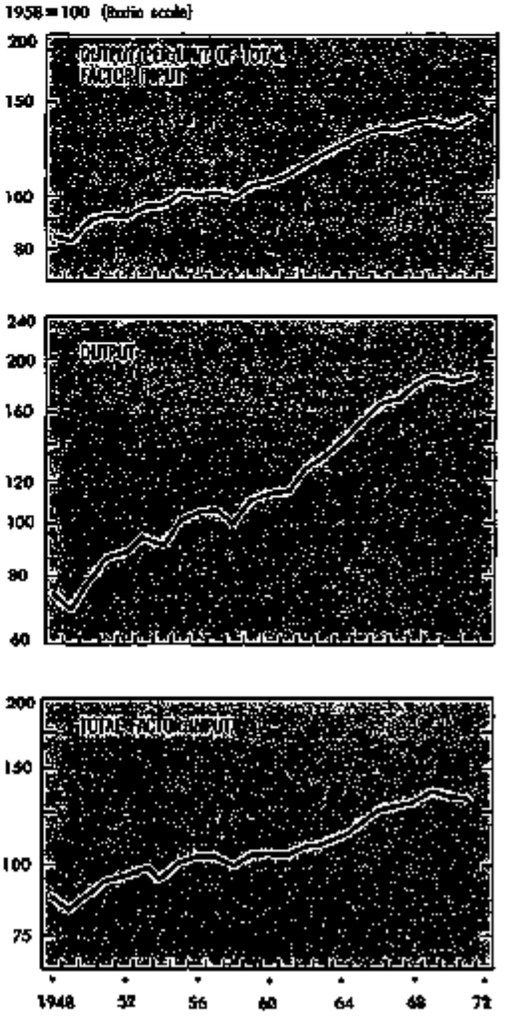
Nonfinancial corporations account for about 60 percent of the Nation's total real output and for about 70 percent of the real output of the nonfarm private economy. Total factor productivity for this sector can be calculated without encountering the problem of separating the inputs of proprietors into labor and capital shares, which must be faced in analyzing the noncorporate economy. Also, the constant dollar output of nonfinancial corporations is defined more clearly than some types of output that would be included in a more aggregative analysis. Furthermore, problems involved in combining data derived from establishments with data derived from companies, which complicate the measurement of output and of factor inputs for more finely defined sectors or industries, are largely absent for nonfinancial corporations taken as a whole.

Trends since 1948

Productivity in nonfinancial corporations, measured as output per unit of total factor input, rose at an annual rate of 2.2 percent from 1948 to 1971. Over this period corporate output increased 4 percent per year while total factor input increased 1.8 percent per year.

CHART 10

Nonfinancial Corporations: Output and Total Factor Input



NOTE.—Acknowledgments are due to Jacquelin Bauman and F. Beatrice Coleman for the man-hour estimates, to Shirley F. Loftus for the inventory estimates, and to Allan H. Young and John C. Musgrave for the estimates of the stock of fixed investment.

The rate of increase in output per unit of total factor input was about four-fifths of the rate of increase in labor productivity, i.e., output per man-hour worked. The slower growth of total factor productivity than of man-hour productivity was the result of a much faster growth of capital input than of labor input. Capital input grew at an annual rate of 4 percent while labor input grew at an annual rate of 1.2 percent.

Productivity in terms of output per unit of total factor input increased most rapidly from 1960 to 1966—at an annual rate of 3.5 percent. During this period both output and total factor input increased sharply. Output increased at an annual rate of 6.5 percent while total factor input increased at an annual rate of 2.9 percent. Both labor and capital contributed to the sharp growth of total factor input in the early and mid 1960's. Labor input increased at 2.5 percent per year. The pickup in the growth of capital input began somewhat later and carried through to 1968. From 1963 to 1968, capital input increased at an annual rate of 5.2 percent.

The rate of growth in productivity averaged 1.1 percent per year from 1966 to 1971. This rate was well below the 3.5 percent rate for the 1960–66 period and also below that for the 1950's when productivity gains averaged about 1.9 percent.

As the growth in output slackened in 1967, productivity declined on an annual basis for the first time since the 1958 recession. Following recoveries in 1968 and 1969, productivity registered another decline in 1970 as corporate output fell. The 1971 recovery raised output 0.5 percent above 1969 and, with a decline in labor input from 1969 to 1971, productivity increased to 2.3 percent above its 1969 level.

The rate of return to capital is calculated in this report by expressing property income (interest plus profits) as a percentage of net capital stock valued at current replacement cost. Over the period 1948 to 1971, changes in rates of return were positively correlated with changes in productivity. The rate of return measured before corporate income taxes trended downward from about 17 percent at the beginning of the 1950's to about 13 percent at the end, while during the first half of the 1960's it increased sharply to over 16 percent in 1965 and 1966. Since 1966 the rate of return has fallen and after a low of 9.4 percent in 1970 it stood just under 10 percent in 1971—

Table 1.—Nonfinancial Corporations: Gross Product and Unit

Line		1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
		Billions of dollars																
1	Gross product	137.9	133.3	151.7	174.3	183.6	194.7	193.6	216.3	231.2	241.9	236.6	263.7	273.1	278.4	302.3	330.6	360.6
2	Capital consumption allowances less depreciation adjustment.	10.3	11.3	12.6	14.7	15.9	16.6	17.3	18.5	20.7	22.3	23.9	25.0	26.0	27.0	28.2	29.5	31.2
3	Capital consumption allowances	6.9	7.8	8.6	10.1	11.3	12.9	14.7	17.1	18.5	20.4	21.5	22.0	24.3	25.6	29.3	31.9	33.9
4	Depreciation adjustment [1]	−3.4	−3.5	−4.0	−4.6	−4.6	−3.7	−2.8	−1.5	−2.2	−2.4	−2.4	−2.0	−1.7	−1.4	1.2	1.5	1.7
5	Indirect business taxes plus transfer payments less subsidies.	12.1	12.6	14.0	15.2	16.8	18.2	17.4	19.2	20.5	22.4	22.8	24.6	28.4	27.7	29.7	31.5	33.5
6	Income originating in nonfinancial corporations [2]	114.6	109.4	125.0	144.5	149.3	162.9	156.9	178.6	189.7	196.7	189.3	214.0	220.6	223.8	243.0	269.6	294.6
7	Compensation of employees	87.6	85.1	94.6	110.0	118.0	128.4	126.2	138.2	151.0	158.7	165.6	179.6	179.0	181.3	194.7	204.4	218.9
8	Wages and salaries	83.4	80.9	89.1	103.2	110.8	120.6	117.9	128.7	140.3	148.7	143.8	156.4	152.3	153.0	178.2	184.5	197.5
9	Supplements	4.0	4.2	5.5	6.8	7.2	7.8	8.3	9.4	10.8	12.0	12.1	14.3	15.7	16.3	16.5	19.9	21.4
10	Net interest	.9	1.0	.9	1.1	1.3	1.3	1.6	1.8	1.7	2.2	2.7	3.7	3.0	3.5	4.1	4.5	5.1
11	Corporate profits and inventory valuation and depreciation adjustments.	26.2	23.3	29.5	33.2	30.1	33.2	29.1	38.6	36.9	35.9	31.1	40.7	38.6	38.8	46.1	60.1	57.6
12	Profits before tax	21.2	24.2	33.5	38.1	33.8	34.9	33.1	42.6	41.9	39.8	33.7	43.2	40.1	40.3	44.7	48.1	55.8
13	Profits tax liability	11.2	9.5	16.7	21.8	17.8	18.5	15.7	19.5	19.5	18.9	15.3	20.8	19.5	19.8	20.9	23.9	24.3
14	Profits after tax	10.0	15.4	21.7	18.1	16.0	16.4	15.3	22.3	23.1	20.9	17.5	22.5	20.6	20.5	23.9	26.2	31.4
15	Dividends	6.5	6.5	7.9	7.8	7.8	8.0	8.2	9.4	10.1	10.4	10.2	10.9	11.6	11.6	12.8	14.3	15.0
16	Undistributed profits	13.4	8.9	13.8	10.3	8.1	8.4	8.1	12.8	11.9	10.5	7.3	11.6	8.8	8.9	11.1	11.9	16.5
17	Inventory valuation adjustment	−2.2	1.9	−5.0	−1.2	1.0	−1.0	−.3	−1.7	−2.7	−1.5	−.8	−.5	.2	−.1	.8	−.5	−.6
		Billions of 1958 dollars																
18	Gross product in 1958 dollars	172.3	165.6	188.4	203.5	207.1	219.3	212.4	237.2	244.0	247.2	236.6	256.8	257.1	270.6	292.9	308.9	329.7
		Dollars																
19	Current dollar cost per unit of 1958 dollar gross product	0.793	0.805	0.834	0.857	0.870	0.886	0.909	0.912	0.948	0.979	1.000	1.011	1.033	1.029	1.034	1.070	1.094
20	Capital consumption allowances less depreciation adjustment.	.060	.068	.068	.072	.077	.076	.081	.078	.085	.092	.101	.098	.097	.100	.096	.096	.095
21	Indirect business taxes plus transfer payments less subsidies.	.070	.076	.075	.075	.081	.083	.081	.081	.085	.090	.097	.094	.095	.103	.101	.102	.102
22	Compensation of employees	.507	.514	.507	.541	.570	.584	.591	.582	.619	.642	.699	.684	.670	.670	.665	.664	.664
23	Net interest	.005	.006	.005	.005	.006	.006	.007	.007	.007	.009	.011	.010	.011	.013	.014	.015	.015
24	Corporate profits and inventory valuation and depreciation adjustments.	.151	.141	.158	.164	.145	.137	.137	.164	.151	.145	.132	.156	.144	.144	.158	.183	.173
25	Profits tax liability	.065	.057	.090	.108	.086	.084	.074	.084	.081	.076	.065	.080	.073	.073	.071	.074	.074
26	Profits after tax plus inventory valuation and depreciation adjustments.	.086	.083	.069	.061	.060	.053	.063	.080	.070	.069	.068	.077	.071	.070	.088	.088	.093

1. This is the difference between depreciation claimed on Federal tax returns, and depreciation valued at current (i.e., replacement) cost and computed on the straight-line pattern with service lives 15 percent shorter than those shown in the Internal Revenue Service's Bulletin F.

2. Differs from that published in table 1.14 of the national income and product accounts because the depreciation adjustment has been added.

a figure lower than that recorded in any year prior to 1970. The after-tax rate of return traced a similar path.

In interpreting these results it should be kept in mind that the capital input measure is based upon the constant dollar stock of capital owned by nonfinancial corporations, and is thus not adjusted for changes in the degree of utilization of the capital stock. Also, labor input is measured by total man-hours worked instead of the more sophisticated techniques underlying other studies of factor input and productivity, for instance, Edward F. Denison's 1962 study, *The Sources of Economic Growth in the United States and the Alternatives Before Us.*

Charts 10 and 11 show total factor productivity, output, and factor inputs for nonfinancial corporations. Chart 12 and table 5 show rates of return on net capital stock. Table 1 shows gross product originating in nonfinancial corporations. Tables 2 and 3 show estimates of man-hours worked and capital stock, and table 4 summarizes output, inputs, and productivity.

Costs, 1948–71

1965	1966	1967	1968	1969	1970	1971	Line
Billions of dollars							
377.6	412.0	430.8	469.9	502.9	536.2	553.9	1
33.5	36.7	40.5	46.4	50.0	55.4	61.2	2
35.4	38.4	41.7	45.4	49.5	54.1	59.3	3
1.9	1.7	1.2	.9	−.4	−1.5	−1.9	4
35.7	36.8	38.2	45.7	47.1	49.9	54.2	5
306.4	339.5	351.0	381.8	405.0	430.7	437.5	6
234.3	261.0	276.9	301.5	320.5	344.2	362.0	7
212.7	238.3	248.6	268.8	283.7	305.2	319.2	8
23.6	27.7	29.2	33.0	36.9	39.0	42.9	9
6.0	7.3	8.8	10.2	12.2	14.2	16.2	10
65.0	71.2	68.5	70.0	61.6	51.8	55.8	11
65.8	71.2	66.2	72.4	67.6	67.3	65.5	12
27.6	30.1	28.4	34.0	33.4	27.1	30.5	13
38.2	41.2	37.8	38.3	34.2	30.7	35.0	14
16.9	18.2	18.9	20.9	20.9	21.1	20.9	15
21.3	23.0	19.0	17.5	13.3	9.6	14.1	16
−1.7	−1.9	−1.1	−2.3	−6.5	−4.5	−4.4	17
Billions of 1958 dollars							
357.8	385.0	398.2	415.0	420.5	425.0	427.4	18
Dollars							
1,065	1,072	1,104	1,132	1,166	1,225	1,264	19
.094	.095	.104	.107	.116	.131	.140	20
.100	.095	.100	.105	.109	.117	.124	21
.669	.678	.707	.727	.768	.818	.838	22
.017	.019	.023	.025	.030	.035	.037	23
.155	.155	.170	.169	.143	.122	.136	24
.077	.078	.073	.062	.078	.064	.070	25
.107	.107	.097	.087	.066	.058	.066	26

Derivation of Output and Factor Input Measures

THIS study brings together a number of measures relating to nonfinancial corporations which have been developed by BEA. Quarterly and annual estimates of gross product and its components are published regularly in the SURVEY OF CURRENT BUSINESS (table 9 on page 12 of this issue and table 1.14 of the July issues). Estimates of profits based on measures of depreciation that are consistent over time were published in May 1968 and updated in the January 1972 SURVEY. The estimates newly published in this report are: output of nonfinancial corporations at factor cost in constant (1958) dollars; the gross and net stock of fixed capital owned by nonfinancial corporations in constant (1958) and current replacement cost valuations; capital consumption allowances in constant (1958) dollars; man-hours worked by employees of nonfinancial corporations consistent with BEA's regular compensation and employment estimates; and combinations of capital stocks and man-hours worked to measure total factor input.

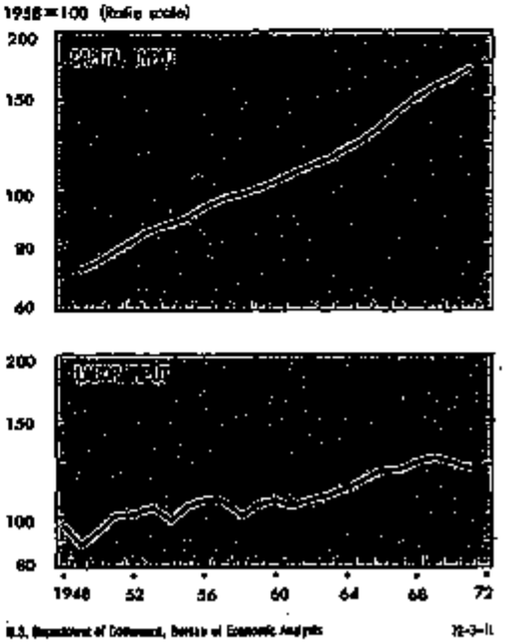
Output

The output measure most appropriate for comparison with total factor inputs is output valued at factor cost in constant (1958) dollars, because it excludes capital consumption allowances and indirect business taxes which are not returns to factors of production. This measure is derived by deducting from BEA's measure of constant dollar gross product originating in nonfinancial corporations the sum of constant dollar capital consumption allowances, indirect business taxes (net of subsidies received) and business transfer payments.

The gross product of nonfinancial corporations in current dollars is estimated from the income side of the national income and product accounts. The estimates of compensation of employees are largely based upon data collected from establishments reporting under the unemployment insurance system, with legal form allocations based on data from the economic censuses. The estimates of capital consumption allowances, business transfer payments, net interest, and profits are based upon statistical tabulations of income tax returns. Indirect business taxes and subsidies are obtained from governmental accounting records, with

CHART 11

Nonfinancial Corporations: Composition of Total Factor Input



allocations of indirect business taxes by legal form of organization made on the basis of the value of output produced.

The constant dollar measure of gross corporate product is derived from BEA's estimates of gross product by industry by multiplying each industry's real gross product by the percentage of that industry's output attributable to corporations and summing to a total for nonfinancial corporations. Capital consumption allowances and indirect business taxes (net of subsidies) and business transfer payments are estimated in constant (1958) dollars and deducted from gross corporate product in order to provide output valued at factor cost in constant (1958) dollars.

The capital consumption allowances shown in BEA's regular presentation of data on nonfinancial corporations are valued at historical cost and are affected by changes in depreciation practices permitted under Federal tax laws and regulations. To obtain constant dollar output at factor cost, this measure is replaced with an estimate of capital consumption allowances in constant (1958) dollars that is based on the assumption of straight-line depreciation with service lives averaging 85 percent of those shown in Bulletin F of the Internal Revenue Service.

In order to obtain profits based on consistent depreciation practices and current cost valuation, this new measure of capital consumption was also valued at current prices and then deducted from the sum of profits and capital consumption allowances as shown in the regular presentation. In table 1, the difference between the regularly shown capital consumption allowances at historical cost and the newly computed measure in current prices is shown as the "depreciation adjustment." The method for deriving capital consumption allowances in current and constant dollars is discussed in the section on capital stock.

Estimates of indirect business taxes, business transfer payments, and subsidies are part of BEA's regular presentation of current dollar data on nonfinancial corporations. For this study, a constant dollar measure of indirect business taxes is derived, and this measure is used to extrapolate the $\frac{1}{2}$ billion 1958 value of business transfer payments less subsidies. Constant dollar indirect business taxes are obtained by extrapolating the value of indirect taxes in 1958 by the output of the taxed commodities and services. Taxes on heavily taxed products or products whose output fluctuated more than average are estimated separately. The value of the automobile excise tax in 1958 is extrapolated by constant dollar auto product; liquor taxes by constant dollar personal consumption expenditures for alcoholic beverages; tobacco taxes by constant dollar personal consumption expenditures for tobacco products; gasoline taxes by the number of gallons consumed; and property taxes on residential structures by the constant dollar net stock of these structures owned by nonfinancial corporations. All other taxes, accounting for 65 percent of the 1958 total, are extrapolated by an estimate of constant dollar net corporate product at market prices excluding corporate product associated with the separately extrapolated items.

Labor input

The measure of labor input used in this study is an index of total man-hours worked by employees of nonfinancial corporations each year (table 2).

The starting point for the man-hour estimates is an estimate of average annual employment in nonfinancial corporations, counting both full- and part-time workers. This estimate is based on a tabulation of employment by industry as reported by establishments to the employment security agencies of the 50 States and the District of Columbia. Data from social security records are used to extend the figures to cover employees of firms outside the unemployment insurance program. The resulting employment estimates represent average employment during the year and are published in table 6.3 of the

Table 2.—Nonfinancial Corporations: Man-Hours Worked, Employment, Average Hours Worked, and Compensation Per Man-Hour, 1948–71

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
	Billions																							
Man-hours worked	55.6	51.9	54.7	58.9	59.6	61.2	57.5	61.2	63.0	62.3	58.3	61.8	62.4	61.4	63.5	64.4	65.1	69.1	72.5	72.7	74.1	76.0	74.1	73.7
	Millions																							
Average number of full-time equivalent employees	25.5	25.2	26.2	28.0	28.4	29.3	28.0	29.1	30.2	30.2	28.1	29.7	30.2	29.6	30.6	30.9	31.6	32.8	34.7	35.9	36.1	37.2	36.7	36.0
	Hours																							
Average annual hours worked per full-time equivalent employee	2,097	2,063	2,092	2,104	2,100	2,089	2,063	2,099	2,088	2,060	2,060	2,084	2,068	2,072	2,084	2,084	2,063	2,098	2,092	2,081	2,053	2,046	2,022	2,048
	Dollars																							
Compensation of employees per man-hour worked	1.58	1.64	1.73	1.87	1.98	2.10	2.18	2.26	2.40	2.55	2.65	2.78	2.87	2.85	2.97	3.18	3.31	3.42	3.60	3.79	4.07	4.35	4.61	4.93
Wages and salaries per man-hour worked	1.50	1.56	1.63	1.74	1.86	1.97	2.04	2.10	2.23	2.38	2.44	2.52	2.62	2.66	2.76	2.87	2.99	3.08	3.22	3.39	3.63	3.89	4.12	4.39
Supplements per man-hour worked	.07	.08	.10	.12	.12	.13	.14	.16	.17	.19	.21	.23	.25	.26	.29	.31	.32	.34	.38	.40	.44	.46	.49	.54

national income and product tables in the July SURVEY each year. Employment in nonfinancial corporations is derived by applying to employment in each industry a ratio of corporate employment to total employment for that industry. The ratios are based upon data from various economic censuses and other information.

The estimate of full- and part-time employment in nonfinancial corporations is converted to man-hours paid by multiplying corporate employment in each industry by the Bureau of Labor Statistics' figures on average annual hours in that industry. Man-hours paid are then converted to man-hours worked on the basis of the percentage of hours paid that are not worked because of sickness, accident, or vacation, as computed from the Census Bureau's Current Population Survey, with an additional allowance for man-hours paid for legal holidays. For railroads, the conversion is based upon data specific to the industry.

In addition to the estimate of man-

Table 3.—Nonfinancial Corporations: Constant Dollar and Current Dollar Gross and Net Stocks, By Type of Asset, 1948–71 [1]

Midyear	Gross stocks, by type of asset						Net stocks, by type of asset						Memoranda: Government-owned, privately operated assets	
	Total, all types [2]	Inventories	Nonresidential structures and equipment			Residential structures	Total, all types [2]	Inventories	Nonresidential structures and equipment			Residential structures	Gross stocks	Net stocks
			Total adjusted for valuation of Government surplus assets	Total with Government surplus assets valued at second-hand prices	Adjustment [3] for valuation of Government surplus assets				Total adjusted for valuation of Government surplus assets	Total with Government surplus assets valued at second-hand prices	Adjustment [3] for valuation of Government surplus assets			
	Billions of 1958 dollars													
1948	365.1	60.7	296.6	287.8	8.9	7.9	213.1	60.7	147.3	142.2	5.0	5.1	25.4	19.5
1949	377.7	60.8	308.1	298.1	10.0	9.0	223.8	60.6	156.6	151.3	5.3	6.1	21.0	15.5
1950	391.2	62.3	318.8	308.0	10.3	10.6	233.8	62.3	163.9	158.8	5.1	7.6	19.5	13.5
1951	410.7	70.8	329.8	319.2	10.6	10.9	249.1	70.9	171.7	166.8	4.9	8.4	18.5	12.5
1952	428.3	75.0	340.2	329.5	10.7	12.3	264.1	75.9	179.6	174.8	4.7	8.7	18.0	12.5
1953	442.7	77.8	352.3	341.7	10.6	12.6	273.6	77.8	186.9	182.6	4.3	8.8	17.8	12.5
1954	453.6	77.1	363.3	352.8	10.5	13.2	280.2	77.1	194.0	190.0	4.0	9.1	18.1	13.1
1955	466.3	78.7	375.7	365.2	10.5	13.9	289.7	78.7	201.5	197.9	3.6	9.5	18.5	13.6
1956	488.7	84.0	390.4	380.0	10.4	14.3	304.6	84.0	211.0	207.7	3.3	9.6	18.6	13.5
1957	507.4	86.7	406.2	396.0	10.2	14.6	317.6	86.7	222.4	218.6	3.8	9.7	18.7	13.1
1958	520.2	85.9	419.0	409.3	9.8	15.3	324.6	85.9	228.7	224.1	2.6	10.0	18.7	12.6
1959	532.7	86.9	429.6	420.2	9.4	16.9	331.7	86.9	234.0	231.7	2.3	10.8	18.7	12.1
1960	550.3	90.5	442.5	433.4	9.2	17.2	343.4	90.5	241.5	239.4	2.1	11.4	18.6	11.5
1961	566.9	92.7	455.2	447.3	8.9	18.0	353.8	92.7	249.1	247.2	1.9	12.0	18.2	11.0
1962	585.3	95.8	470.3	461.7	8.6	19.2	368.4	96.6	256.7	254.9	1.8	12.9	17.9	10.6
1963	607.0	100.6	485.9	477.6	8.3	20.5	380.0	100.6	263.5	261.8	1.8	13.9	17.7	10.3
1964	631.6	106.7	503.6	495.8	7.8	21.9	397.5	106.1	278.5	275.1	1.4	14.9	17.9	10.3
1965	662.1	112.5	526.3	519.1	7.2	23.0	419.5	112.5	281.1	280.0	1.1	15.6	18.3	10.2
1966	701.3	123.3	554.1	547.5	6.6	23.9	449.4	133.3	310.0	309.1	.9	16.1	18.6	10.2
1967	742.1	138.5	583.3	577.5	6.2	24.6	479.5	153.5	329.5	328.7	.8	16.6	18.9	10.2
1968	776.4	139.8	612.6	606.7	5.9	25.0	504.5	139.8	347.4	346.7	.7	17.3	19.1	10.1
1969	815.0	145.5	642.8	637.4	5.4	27.3	529.1	145.5	356.4	355.0	.4	18.2	n.a.	n.a.
1970	861.7	149.4	673.4	669.7	4.7	28.0	551.5	149.4	383.0	382.8	.2	19.4	n.a.	n.a.
1971	903.5	151.0	702.6	698.4	4.2	30.3	570.2	151.0	398.4	398.3	.1	20.8	n.a.	n.a.
	Billions of dollars													
1948	228.5	60.0	207.4	201.7	5.7	6.4	156.8	59.9	102.7	99.6	3.1	4.1	17.0	13.3
1949	278.9	60.0	221.9	218.1	5.8	7.0	167.3	59.9	112.5	109.0	3.5	4.3	14.7	10.9
1950	301.1	63.9	239.4	232.0	7.4	8.7	182.5	58.0	123.2	119.5	3.7	6.3	14.4	10.2
1951	336.7	68.5	263.5	256.3	8.2	9.6	203.2	68.6	137.3	133.5	3.8	7.4	14.7	10.1
1952	354.4	69.1	284.2	275.6	8.6	11.1	220.4	69.1	149.4	145.7	3.7	7.9	14.8	10.2
1953	364.3	70.6	299.1	290.4	8.7	11.6	227.6	70.6	155.8	152.2	3.6	8.3	14.1	10.6
1954	364.6	70.6	312.1	303.3	8.8	11.9	225.5	70.6	155.7	152.4	3.3	8.2	14.6	11.2
1955	418.6	78.2	332.5	323.4	9.1	12.9	260.5	78.2	178.5	175.3	3.2	8.6	16.4	12.0
1956	469.5	87.0	364.6	355.0	9.6	13.9	297.7	87.0	197.3	194.2	3.1	9.4	17.4	12.6
1957	497.3	88.9	396.3	387.0	9.3	14.6	312.3	88.9	216.5	213.5	3.0	9.7	18.3	12.8
1958	520.3	85.9	418.6	409.2	9.3	15.3	324.6	85.9	228.7	226.1	2.6	10.0	18.7	12.6
1959	638.1	87.2	434.1	424.6	9.6	16.7	334.9	87.2	236.5	234.2	2.3	11.1	18.9	12.2
1960	538.4	91.1	449.3	440.0	9.3	18.0	345.1	91.1	245.1	243.0	2.1	11.9	18.9	11.7
1961	577.1	93.5	464.7	455.7	9.0	18.9	359.5	93.5	252.4	251.5	1.9	12.5	18.6	11.3
1962	590.8	96.7	482.1	473.4	8.7	20.5	373.3	96.7	262.5	261.0	1.8	13.5	18.5	11.0
1963	625.7	101.7	501.7	493.2	8.6	22.3	390.9	101.7	274.0	272.4	1.6	15.2	18.6	10.9
1964	667.2	107.7	524.9	516.7	8.2	24.6	412.5	107.7	288.1	286.7	1.4	16.7	19.2	11.0
1965	709.3	116.3	557.7	550.0	7.7	26.3	442.3	116.3	306.7	305.5	1.2	17.8	20.0	11.3
1966	787.8	140.1	679.6	672.2	7.4	28.1	487.6	140.1	338.0	336.9	1.1	18.9	21.0	11.6
1967	829.6	148.0	869.0	845.5	7.2	30.6	536.6	148.0	372.7	371.7	1.0	20.1	22.0	11.9
1968	906.1	152.8	717.5	710.4	7.1	33.7	583.2	152.9	407.5	406.9	.9	22.5	23.8	12.9
1969	988.6	165.3	795.6	788.7	6.8	37.7	643.6	165.3	453.2	452.7	.5	25.1	n.a.	n.a.
1970	1,101.6	176.6	883.8	877.6	6.3	41.2	707.3	176.6	503.5	503.2	.3	27.6	n.a.	n.a.
1971	1,196.4	184.5	960.4	955.0	5.9	46.5	783.6	184.5	567.9	567.8	.1	31.2	n.a.	n.a.

N.a. Not available.

[1] Calculated using straight-line depreciation, 85 percent of Bulletin F service lives, and cost alternative 3. These terms are discussed in the text.

[2] Including adjustment for valuation of Government surplus assets.

[3] Equals half of the difference between stocks calculated with surplus assets purchased by nonfinancial corporations from Government valued at original acquisition prices to Government, and stocks calculated with these surplus assets valued at second-hand prices. This adjustment is discussed in the text.

hours worked, table 2 shows statistics on the average number of full-time equivalent employees in nonfinancial corporations. The conversion was done initially for 1948, using data from the 1948 economic census. The procedure is to multiply the number of part-time employees by the ratio of the average earnings of part-time employees to the average earnings of full-time employees, and add the result to the number of full-time employees. The industry ratios of part-time to full-time employment are extrapolated from 1948 by the movement of ratios of total hours worked by part-time employees to total hours worked by full-time employees as computed from the Current Population Survey. These ratios are used to convert the average number of full- and part-time employees into the average number of full-time equivalent employees in subsequent years. An adjustment from full- and part-time employment to full-time equivalent employment is made only in industries where part-time employment is common, such as retail trade and services. No adjustment is made for mining, construction, manufacturing, telephone and telegraph, or utilities. (See table 6.4 of the July issue of the SURVEY.)

The figures for average annual hours worked per full-time equivalent employee are derived by dividing the man-hours worked by the average number of full-time equivalent employees. The figures shown in table 2 for compensation of employees (wages and salaries, and supplements) per man-hour worked are derived by dividing the respective current dollar compensation data in table 1 by the man-hours worked data in table 2.

Capital stocks

The capital stock estimates shown in table 3 are computed in constant (1958) dollars and current replacement costs. The stock estimates are computed for

Table 4.—Nonfinancial Corporations: Inputs, Output, and

Line		1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
		Billions of 1958 Dollars																
1	Output at factor cost (income originating)	141.3	133.2	151.0	155.7	166.0	179.0	172.6	193.6	198.4	200.5	189.3	211.9	216.1	218.3	237.9	256.3	285.4
2	Gross product	172.9	165.6	186.4	203.5	207.1	219.8	213.4	237.2	244.0	247.2	236.0	260.8	267.1	270.6	292.9	309.6	339.7
3	Less: Capital consumption allowances less depreciation adjustment	14.3	15.7	17.0	18.0	19.9	19.5	20.2	21.1	22.2	23.2	23.9	24.5	25.5	26.4	27.4	28.7	30.2
4	Indirect business taxes plus business transfer payments less subsidies	17.3	16.7	18.4	19.8	20.2	21.2	20.6	22.5	23.2	23.5	22.8	24.9	25.5	25.8	27.7	29.0	30.8
		Billions																
5	Man-hours worked	55.8	51.9	54.7	53.0	53.6	54.2	57.3	61.2	61.0	62.2	58.8	61.9	61.4	61.4	63.5	64.4	66.1
		Billions of 1958 Dollars																
6	Average capital stock owned [1]	327.1	339.1	351.9	370.6	387.3	405.4	413.3	423.7	442.7	460.1	471.3	482.5	493.6	503.6	520.3	550.3	573.1
7	Gross capital stock owned	365.1	377.7	391.2	410.7	428.3	447.7	459.6	468.3	488.7	507.4	520.2	533.7	550.5	560.9	585.8	607.0	631.6
8	Net capital stock owned	213.1	223.3	233.3	250.1	264.1	278.6	290.2	289.7	304.6	317.8	324.6	331.7	342.4	353.3	365.4	380.0	397.5
		Index, 1958=100																
9	Output at factor cost (income originating)	74.6	70.4	79.8	87.6	88.7	94.5	91.2	102.3	104.8	105.9	100.0	111.6	114.2	115.3	125.7	132.2	141.9
10	Total factor input	88.2	84.4	95.6	94.5	96.7	99.4	93.7	100.7	104.0	104.0	100.0	104.7	106.1	105.4	109.9	111.0	114.4
11	Labor input	94.5	88.4	93.1	100.1	101.4	104.0	96.3	104.1	107.2	108.0	100.0	105.3	106.1	104.4	108.0	109.5	112.5
12	Capital input	69.4	72.0	74.7	78.6	82.2	85.0	87.0	89.9	93.9	97.5	100.0	102.4	106.5	109.0	112.5	116.8	121.6
13	Output per unit of total factor input	84.7	89.4	90.9	92.3	91.8	95.1	96.2	101.6	100.7	101.8	100.0	106.6	107.5	109.4	115.3	119.1	124.0
	Partial productivity measures:																	
14	Output per man-hour worked	78.0	79.6	83.6	87.4	87.5	90.9	92.7	98.8	97.8	99.9	100.0	105.0	107.5	110.4	116.3	120.8	126.1
15	Output per dollar of capital owned	107.8	97.5	106.8	111.3	108.0	111.3	104.7	113.7	111.5	108.5	100.0	109.0	107.9	105.8	111.7	113.2	118.7

1. Calculated as a weighted average of net and gross stocks with gross stocks receiving a weight of 0.75 and net stocks a weight of 0.25.

Table 5.—Nonfinancial Corporations: Rates of Return [1] on Net Capital Stock Measured at

[Percent]

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Net interest plus profits and inventory valuation and depreciation adjustments	17.6	14.8	17.6	16.3	14.1	13.5	12.7	15.7	13.6	12.3	10.5	13.1	12.0	11.6	12.6	14.0	15.1
Net interest	.6	.8	.5	.4	.5	.6	.7	.5	.6	.7	.8	.8	.9	1.0	1.1	1.2	1.2
Profits and inventory valuation and depreciation adjustments	17.0	14.2	16.8	16.2	13.6	12.9	12.0	15.1	13.0	11.6	9.7	12.2	11.2	10.9	12.4	12.9	13.9
Profits tax liability	7.7	5.2	9.4	10.2	8.9	7.9	6.5	7.7	6.9	6.1	4.0	6.2	5.6	5.5	5.9	5.9	5.9
Profits after tax plus inventory valuation and depreciation adjustments	9.3	8.4	7.4	6.0	5.5	6.0	5.5	7.4	6.0	5.5	4.6	6.0	5.5	5.3	6.5	7.0	7.9
Cash flow, net of dividends	13.2	10.2	12.5	10.6	8.7	9.1	9.4	11.5	10.7	10.0	8.9	10.4	9.6	9.6	10.9	11.6	12.6

1. Calculated by dividing the property income flow items shown in table 1 by the net stock in current cost valuation less the adjustment for valuation of government surplus assets shown in table 3.

the end of each calendar year, and successive yearend estimates are then averaged to obtain the midyear values shown in table 3.

A description of the techniques used by BEA in estimating capital stocks can be found in the volume *Fixed Nonresidential Business Capital in the United States, 1925–1970* published for BEA in 1971 by the National Technical Information Service. (This volume is available for $7.75 from NTIS, Springfield, Va. 22151, catalog number COM–71–01111.) The particular techniques employed to derive estimates of the corporate fixed nonresidential capital stocks are described in an article by Allan H. Young, "Alternative Estimates of Corporate Depreciation and Profits: Parts I and II," SURVEY for April and May 1968. The following discussion is a summary of the techniques used.

The perpetual inventory method is used to compute the estimates of fixed capital stocks. In this method, estimates of gross investment and of service lives are used to develop estimates of stocks and of depreciation. Gross stocks are obtained by cumulating gross investment over time and then subtracting retirements. Depreciation charges are obtained by applying a depreciation formula to the various plant and equipment elements contained in the gross stocks. Net stocks are obtained by subtracting the cumulated depreciation on assets still in service from the value of gross stocks.

Fixed capital stocks are estimated in constant (1958) and current dollars. The constant dollar stock is derived by applying the procedure just described to annual constant dollar gross investment, using the "constant cost 2" alternative. The current dollar stock for a given year is then obtained by multiplying the constant dollar stock by that year's deflator for gross investment.

To estimate corporate nonresidential stocks, corporate gross investment figures are obtained by separating into corporate and noncorporate shares estimates of nonresidential fixed investment in each of 20 groups of equipment and 10 types of structures.

To estimate residential stocks owned by nonfinancial corporations, the annual series of investment in new residential structures by nonfinancial corporations estimated by the Board of Governors of the Federal Reserve System for its Flow-of-Funds Accounts is used. The estimated stocks are then adjusted to bring them into conformity with Census of Housing benchmarks.

Depreciation is estimated using the straight-line formula. The service lives chosen for nonresidential investment are 85 percent of those in Bulletin F of the Internal Revenue Service. For residential investment, a 65-year life is used.

In measuring capital stocks for the purpose of representing capital services, an adjustment is made for surplus assets sold after World War II by the Government to corporations. In general, these assets were sold at prices that understated the services that the purchaser would realize from the assets. However, the services provided by these assets in private use tended to be less than the amount reflected in their original cost to the Government. Accordingly the adjustment to gross stocks is taken as half the difference between what the corporations paid for these assets and what the Government had originally paid for them. A similar adjustment is incorporated in net stocks. This adjustment was largest in 1948, when it increased constant dollar gross stock by 3.1 percent. By 1971, the effect was considerably smaller, with gross stock being raised only 0.6 percent.

Table 3 also shows, as memorandum items, estimates of the value of Govern-

(*Continued on page 55*)

Productivity, 1948–71

1965	1966	1967	1968	1969	1970	1971	Line
Billions of 1958 Dollars							
282.6	315.2	317.5	337.9	349.5	341.7	351.4	1
357.2	385.0	390.2	415.0	430.6	423.0	437.4	2
32.1	34.3	36.6	39.1	41.7	44.2	46.6	3
36.1	36.4	36.9	38.0	39.2	39.0	39.9	4
Billions							
69.1	72.5	72.7	74.1	76.0	76.1	72.7	5
Billions of 1958 Dollars							
611.6	638.3	676.5	705.9	744.0	776.7	805.4	6
682.1	701.3	742.1	778.4	815.6	861.7	883.9	7
419.5	449.4	479.5	504.5	529.1	561.5	570 2	8
Index, 1958=100							
154.6	166.5	167.7	178.5	184.5	180.5	185.6	9
119.6	124.9	127.6	131.1	135.2	132.8	132.9	10
117.5	123.4	123.6	126.0	128.2	126.1	123.7	11
127.6	135.4	143.5	150.6	157.9	164.8	170.9	12
129.2	129.2	131.2	136.2	136.5	134.9	139.7	13
131.6	136.6	138.7	141.7	142.6	143.1	150.0	14
121.1	122.9	116.9	118.5	117.0	109.5	106.6	15

Replacement Cost, 1948–71

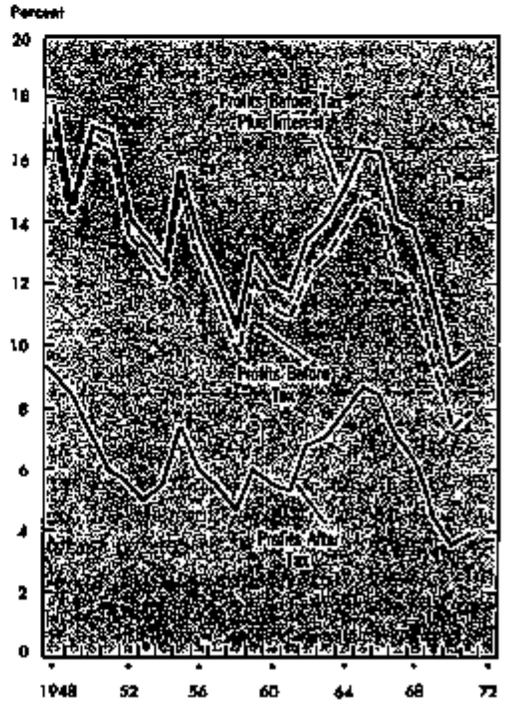
[Percent]

1965	1966	1967	1968	1969	1970	1971
10.3	26.2	14.3	13.3	11.6	9.4	9.9
1.4	1.5	1.7	1.8	2.0	2.1	2.1
14.9	14.6	12.4	12.0	9.6	7.3	7.8
6.3	6.2	5.3	5.8	5.2	3.8	4.0
3.7	3.5	7.1	6.2	4.1	3.3	3.3
12.3	12.6	11.3	10.3	9.6	9.0	8.6

CHART 12

Nonfinancial Corporations:

Rates of Return on Net Capital Stock



Note.—See footnote to table 5.

U.S. Department of Commerce, Bureau of Economic Analysis 72-3-12

Affiliates in those countries plan an 8 percent increase in 1972. Manufacturing affiliates cut spending in 1971 but this was offset by a sharp increase in spending by petroleum affiliates. Spending in Spain by petroleum affiliates is particularly strong.

Affiliates in Canada increased spending 8 percent in 1971 and plan a 10 percent rise in 1972 to $3.2 billion. The 1971 increase was centered in mining and smelting, but affiliates in all major industries are planning increases in 1972.

Heavy reductions in mining and smelting expenditures led to a sharp decrease in Latin American spending in 1971. Aggregate expenditures are expected to be reduced another 3 percent in 1972, to $1.7 billion, even though Brazilian manufacturing affiliates, primarily those in transportation equipment, expect to increase expenditures 20 percent.

Affiliates in the rest of the world—identified in table 1 as "Other Areas"—increased spending 24 percent in 1971 to $4.2 billion, and an 11 percent increase is projected for 1972. Over three-fourths of these gains are due to spending by petroleum affiliates in the Middle East and Indonesia and in the international shipping category.

Japan is becoming an important center of expenditures by affiliates. Until a few years ago spending in Japan was relatively small, but it is now approaching the billion dollar level, with projected expenditures of $0.9 billion in 1972. The sharp growth in recent years presumably reflects the relatively rapid economic growth in Japan and possibly the easing of restrictions on investment. Manufacturing outlays in Japan in 1972 are projected to rise 19 percent to $476 million and petroleum expenditures 18 percent to $359 million. In both industries, these 1972 increases are far stronger than total worldwide growth.

On the country schedules established by the Office of Foreign Direct Investments (OFDI), affiliates in Schedule C countries (including most of continental Western Europe and South Africa) increased spending 10 percent in 1971 to $3.8 billion, and plan a 5 percent increase to $4 billion in 1972. These countries are those for which controls on capital outflows from the United States are strictest. However, expenditures by affiliates do not necessarily lead to outflows of U.S. funds, which the OFDI program is designed to limit. To the extent that investment can be financed by borrowing abroad, spending for plant and equipment is not limited by OFDI regulations.

Affiliates in Schedule B countries (including Spain, the United Kingdom, the Middle East, Japan, and Australia) increased spending 8 percent in 1971 to $3.9 billion, and expect an increase of 14 percent to $4.4 billion in 1972. Affiliates in Schedule A countries (including most of the less developed countries), for which controls on capital outflows are most lenient, increased spending 9 percent in 1971, to $3.5 billion, and plan a 1-percent increase to $3.6 billion in 1972.

(*Continued from page 27*)

ment-owned stocks operated by nonfinancial corporations. A discussion of the treatment of these stocks can be found in Robert J. Gordon, "$45 Billion of U.S. Private Investment Has Been Mislaid," *American Economic Review*, June 1969, and "Comments" by George Jaszi and "Reply" by Gordon, *American Economic Review*, December 1970. Because of data limitations, no similar estimates can be made of assets used by the nonfinancial corporate sector but owned by financial institutions or the personal sector.

The inventory stocks in constant (1958) dollars shown in table 3 are derived separately for major industries. For each industry a benchmark level of stocks calculated on the LIFO basis was prepared for the first year for which LIFO data were available. This level is moved backward to 1947 by successively deducting the corporate share of LIFO inventory change in constant (1958) dollars shown in the national income and product accounts, and moved forward to 1971 by successively adding the corporate share of the LIFO inventory change. For the non-LIFO stocks, book values are adjusted for price changes directly to derive the constant dollar stocks. Inventories for each industry in current dollar valuation are derived by multiplying the constant dollar stocks by indexes of yearend current replacement prices.

Total factor input

In table 4, indexes of labor and capital input are derived from the estimates of man-hours worked and capital stock, and combined into an index of total factor input.

The index of labor input is simply an index of man-hours worked, with no adjustment for the intensity with which man-hours are utilized or for changes in skills.

The index of capital input is derived using a procedure developed by Edward F. Denison for the economy as a whole. Inasmuch as the services provided by a capital good do not remain constant over the life of the asset, but decline somewhat as retirement approaches, the constant dollar capital stock employed to measure capital input is calculated as a weighted average of net and gross stocks with net stocks receiving a weight of 0.25 and gross stocks a weight of 0.75. No adjustment is made for changes in utilization.

The indexes of labor and capital input are combined into an index of total input by the following procedure. The average labor and capital shares of national income originating in nonfinancial corporations are computed for all years from 1948 through 1969, excluding years significantly affected by recessions (1949, 1953, 1954, 1957, 1958, 1960, and 1961). These average labor and capital shares are 0.782 and 0.218, respectively. To derive the index of total factor input, the annual percent change in the index of labor input is multiplied by the average labor share and the annual percent change in the index of capital input is multiplied by the average capital share and the results are summed to obtain the annual percent change in total factor input. These annual percent changes are then chained to a base of 1958=100 to provide the index of total factor input shown in table 4.